CLASS 358 FACSIMILE AND STATIC PRESENTATION PROCESSING

1.1	**STATIC PRESENTATION PROCESSING (E.G., PROCESSING DATA FOR PRINTER, ETC.)**
1.2	. Size, resolution, or scale control
1.3	. Plotter
1.4	. Plural marking means
1.5	. Position or velocity determined
1.6	. Specific to image source
1.7	. Flying dot (e.g., laser beam, etc.)
1.8	. Dot matrix array (e.g., printheads, etc.)
1.9	. Attribute control
2.1	.. Processing based on at least two different image attributes (e.g., character, graphic, photo, line, edge, gray-level, color)
2.99	.. Bi-level image reproduction (e.g., character or line reproduction)
3.01	.. Multi-level image reproduction (e.g., gray level reproduction)
3.02	... Print element property varied to represent gray level
3.03	... Error diffusion in gray level or halftone generation
3.04	.... Property of error weighting filter (e.g., adaptive, deterministic, random)
3.05	.... Adaptive error diffusion
3.06	... Halftoning (e.g., a pattern of print elements used to represent a gray level)
3.07	.... Rescreening (e.g., converting spatial resolution)
3.08	.... Descreening (e.g., inverse halftone conversion)
3.09	.... Print element property varied to effect halftone pattern
3.1	..... Density of print element (e.g., multi-level halftone)
3.11	..... Shape of print element
3.12	..... Size of print element
3.13	.... Dithering (e.g., spatial distribution of print elements by threshold matrix)
3.14	..... Adaptive dithering
3.15	...... Edge adaptive
3.16	..... Ordered dithering (e.g., deterministic or systematic)
3.17	...... Clustered pattern
3.18	...... Dispersed pattern
3.19	..... Stochastic or random dithering
3.2	.... Screen property or geometry (e.g., shape, period, symmetry, aspect ratio)

3.21	... Adaptive multi-level image reproduction
3.22	.... Variable threshold determined by image or other condition (e.g., adaptive thresholding)
3.23	... Look-up table for image processing or print attribute data (e.g., threshold value, print element property)
3.24	.. Adaptive image reproduction
3.26	.. Distortion control in image reproduction (e.g., removing, reducing or preventing image artifacts)
3.27	.. Enhancement control in image reproduction (e.g., smoothing or sharpening edges)
3.28	.. Embedding a hidden or unobtrusive code or pattern in a reproduced image (e.g., a watermark)
3.29	.. Engraving or perforating material to form a printing surface (e.g., printing plate, cylinder, or stencil)
3.3	... Halftone pattern formed on printing surface
3.31	... Character or design formed on printing surface (e.g., intaglio)
3.32	... Mechanical arrangement for forming a printing surface
1.11	. Character or font
1.12	. Detail of medium positioning (e.g., movement to or from presentation location of medium, etc.)
1.13	. Emulation or plural modes
1.14	. Data corruption, power interruption, or print prevention
1.15	. Communication
1.16	. Memory
1.17	.. Page or frame memory
1.18	. Detail of image placement or content
500	**NATURAL COLOR FACSIMILE**
501	. Image reproduction
502	.. Ink-Jet
503	.. Thermal
504	. Measuring, testing, and calibrating
505	. Scanning
506	.. Transparency image scanning
507	.. Cathode-ray tube
508	.. Transceiver
509	.. Illumination
510	... Coherent light
511	.. With prism
512	.. With color filters
513	.. Solid-state
514	... With plural sensors
515	. Color separation
516	.. White balance correction
517	.. Color masking
518	. Color correction
519	.. Gamma correction
520	.. Hue, saturation and luminance

521	.. Gradation
522	.. With histogram
523	.. With memory for storage of conversion data
524	. Intermediate storage
525	. Interpolation
526	. With mark-forming function
527	. Color photography previewer
528	. Size variation
529	. Black signal synthesis
530	. Specific image-processing circuitry
531	.. Electronic retouch
532	.. Sharpness emphasizing
533	.. Moire reduction
534	.. Halftone processing
535	... Matrix
536	... Halftone screening
537	.. Image editing
538	.. Image portion selection
539	.. Image coding (encoder/decoder)
540	.. Composite image
400	**FACSIMILE**
401	. Image reproduction system
402	. Electronic mailbox
403	. Document filing and retrieval system
404	. Facsimile memory monitoring
405	. Image transmission accuracy verification
406	. Facsimile measuring, testing, or calibrating
407	. Facsimile relay system
408	. Plural scanner station
409	. Synchronization
410	.. Sync or phase pulse generator
411	.. Facsimile carrier as synchronization signal
412	.. Phase or speed regulation
413	... Start-stop
414	... With particular clutch mechanism
415	... With pendulum
416	... With tuning fork
417	... With strobe
418	... With movable phase shifter
419	... Receiver motor power transmitted from transmitter
420	... Receiver motor power source frequency change
421	... Receiver motor power source voltage change
422	... Receiver motor power source interruption
423	... With resistance variable in receiver motor power source
424	... Stylus
425	. Multiplex

426.01   . Reduced time or bandwidth for static image
                  communication
426.02   .. Condition based selection or control of image
                  coding technique or communication arrangement
426.03   ... Transfer rate of an uncoded or decoded image
426.04   ... Processing or analysis of an uncoded or
                  decoded image
426.05   ... Storage arrangement or capacity
426.06   ... Amount of image data or code
426.07   ... Coding or decoding rate
426.08   ... Bandwidth or property of a communication
                  medium
426.09   ... Communication error rate or level
426.1   ... Fill bit or dummy signal used
426.11   ... Coded image communication rate
426.12   .. Auxiliary information transmitted (e.g., required
                  to perform or identify decoding technique)
426.13   .. Combined with lossless coding technique (e.g.,
                  fixed or variable run-length coding)
426.14   .. Combined with lossy coding technique (e.g.,
                  coding of quantized transform coefficients)
426.15   .. Coding for analog facsimile equipment (e.g.,
                  Group 1 or 2)
426.16   .. Coding for digital facsimile equipment (e.g.,
                  Group 3 or 4)
434   . Auxiliary signal
435   .. Transmitter and receiver both supply auxiliary
                  signal(s)
436   ... Auxiliary signal controls apparatus at both
                  transmitter and receiver
437   .. Interruption detection and control
438   .. Transmitter supplies auxiliary signal(s)
439   .. Receiver supplies auxiliary signal(s)
440   .. Telephone number or address of designator
441   .. Facsimile alarm
442   . Facsimile system interface
443   . Specific signal processing circuitry
444   .. Memory interface
445   .. Signal sampling and conversion
446   .. Signal voltage or gain control
447   .. Signal enhancing
448   .. Image processing
461   ... Shade correction
449   ... Document size detection
450   ... Plural images combined into a single image
451   ... Picture size conversion
452   ... Image editing
453   ... Image portion selection
462   ... Text and image detection and processing
463   ... Noise elimination
464   ... To distinguish intelligence from background
465   ... Picture signal thresholding

CROSS-REFERENCE ART COLLECTIONS

FOREIGN ART COLLECTIONS
FOR 000   **CLASS-RELATED FOREIGN DOCUMENTS**

Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collection listed below. These collections contain ONLY foreign patents or nonpatent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

FOR 142   **STATIC PRESENTATION PROCESSING (E.G., FOR A PRINTER) (395/101)**

FOR 143   . Size or scale control (395/102)

FOR 144   . Plotter (395/103)

FOR 145   . Plural marking means (395/104)

FOR 146   . Position or velocity determined (395/105)

FOR 147   . Specific to image source (395/106)

FOR 148   . Flying dot (e.g., laser beam) (395/107)

FOR 149   . Dot matrix array (e.g., printheads) (395/108)

FOR 150   . Attribute control (395/109)

FOR 151   . Character or font (395/110)

FOR 152   . Details of medium positioning (e.g., movement to or from presentation location of medium) (395/111)

FOR 153   . Emulation or plural modes (395/112)

FOR 154   . Data corruption, power interruption, or print prevention (395/113)

FOR 155   . With communications (e.g., data compression, data expansion, plural devices) (395/114)

FOR 156   . Memory (395/115)

FOR 157   .. Page or frame memory (395/116)

FOR 158   . Details of image placement or content (395/117)

CLASS 382 IMAGE ANALYSIS

100	**APPLICATIONS**
101	. Mail processing
102	. . ZIP code
103	. Target tracking or detecting
104	. Vehicle or traffic control (e.g., auto, bus, or train)
105	. . License plate
106	. Range or distance measuring
107	. Motion or velocity measuring
108	. Surface texture or roughness measuring
109	. Seismic or geological sample measuring
110	. Animal, plant, or food inspection
111	. Textiles or clothing
112	. Document or print quality inspection (e.g., newspaper, photographs, etc.)
113	. Reading maps, graphs, drawings, or schematics
114	. Reading aids for the visually impaired
115	. Personnel identification (e.g., biometrics)
116	. . Using a combination of features (e.g., signature and fingerprint)
117	. . Using a characteristic of the eye
118	. . Using a facial characteristic
119	. . Using a signature
120	. . . Sensing pressure together with speed or acceleration
121	. . . Sensing pressure only
122	. . . Sensing speed or acceleration only
123	. . . Sensing geometrical properties
124	. . Using a fingerprint
125	. . . Extracting minutia such as ridge endings and bifurcations
126	. . . With a guiding mechanism for positioning finger
127	. . . With a prism
128	. Biomedical applications
129	. . DNA or RNA pattern reading
130	. . Producing difference image (e.g., angiography)
131	. . Tomography (e.g., CAT scanner)
132	. . X-ray film analysis (e.g., radiography)
133	. . Cell analysis, classification, or counting
134	. . . Blood cells
135	. Reading paper currency
136	. Reading coins
137	. Reading bank checks (e.g., documents bearing E-13B type characters)
138	. . Reading monetary amount
139	. . Reading MICR data

140   . . . Including an optical imager or reader
141   . Manufacturing or product inspection
142   . . Bottle inspection
143   . . Inspection of packaged consumer goods
144   . . Mask inspection (e.g., semiconductor
                 photomask)
145   . . Inspection of semiconductor device or printed
                 circuit board
146   . . . Measuring external leads
147   . . . Inspecting printed circuit boards
148   . . . At plural magnifications or resolutions
149   . . . Fault or defect detection
150   . . . . Faulty soldering
151   . . . Alignment, registration, or position
                 determination
152   . . Tool, workpiece, or mechanical component
                 inspection
153   . Robotics
154   . 3-D or stereo imaging analysis
155   **LEARNING SYSTEMS**
156   . Neural networks
157   . . Network learning techniques (e.g., back
                 propagation)
158   . . Network structures
159   . Trainable classifiers or pattern recognizers (e.g.,
                 adaline, perceptron)
160   . . Generating a standard by statistical analysis
161   . . Alphanumerics
162   **COLOR IMAGE PROCESSING**
163   . Drop-out color in image (i.e., color to be
                 removed)
164   . Image segmentation using color
165   . Pattern recognition or classification using color
166   . Compression of color images
167   . Color correction
168   **HISTOGRAM PROCESSING**
169   . With a gray-level transformation (e.g., uniform
                 density transformation)
170   . With pattern recognition or classification
171   . For segmenting an image
172   . For setting a threshold
173   **IMAGE SEGMENTATION**
174   . Using projections (i.e., shadow or profile of
                 characters)
175   . Separating document regions using preprinted
                 guides or markings
176   . Distinguishing text from other regions
177   . Segmenting individual characters or words
178   . . Separating touching or overlapping characters
179   . . Segmenting hand-printed characters
180   . Region labeling (e.g., page description language)

181	**PATTERN RECOGNITION**
182	. Limited to specially coded, human-readable characters
183	. . Characters formed entirely of parallel bars (e.g., CMC-7)
184	. . With separate timing or alignment marks
185	. Ideographic characters (e.g., Japanese or Chinese)
186	. Unconstrained handwriting (e.g., cursive)
187	. On-line recognition of handwritten characters
188	. . Writing on ordinary surface (i.e., electronics are in pen)
189	. . With a display
190	. Feature extraction
191	. . Multispectral features (e.g., frequency, phase)
192	. . Feature counting
193	. . . Counting intersections of scanning lines with pattern
194	. . . Counting individual pixels or pixel patterns
195	. . Local or regional features
196	. . . Slice codes
197	. . . Directional codes and vectors (e.g., Freeman chains, compasslike codes)
198	. . . . Extracted from alphanumeric characters
199	. . . Pattern boundary and edge measurements
200	. . . . Measurements made on alphanumeric characters
201	. . . Point features (e.g., spatial coordinate descriptors)
202	. . . Linear stroke analysis (e.g., limited to straight lines)
203	. . . Shape and form analysis
204	. . . . Topological properties (e.g., number of holes in a pattern, connectivity, etc.)
205	. . . Local neighborhood operations (e.g., 3x3 kernel, window, or matrix operator)
206	. . Global features (e.g., measurements on image as a whole, such as area, projections, etc.)
207	. . Waveform analysis
208	. . . With a tapped delay line
209	. Template matching (e.g., specific devices that determine the best match)
210	. . Spatial filtering (e.g., holography)
211	. . . With electrically controlled light modulator or filter
212	. . Nonholographic optical mask or transparency
213	. . . Using both positive and negative masks or transparencies
214	. . . With a display
215	. . Using dynamic programming or elastic templates (e.g., warping)
216	. . At multiple image orientations or positions
217	. . Electronic template

263   .. Highpass filter (i.e., for sharpening or enhancing
              details)
264   .. Lowpass filter (i.e., for blurring or smoothing)
265   .. Recursive filter
266   . Edge or contour enhancement
267   .. Minimize discontinuities in dot-matrix image data
              (i.e., connecting or merging the dots)
268   .. Minimize discontinuities at boundaries of image
              blocks (i.e., reducing blocking effects or effects of
              wrap-around)
269   .. Minimize jaggedness in edges (e.g., anti-
              aliasing)
270   . Variable threshold, gain, or slice level
271   .. Based on the results of a count
272   .. Based on a local average, mean, or median
273   .. Based on peak levels
274   . Intensity, brightness, contrast, or shading
              correction
275   . Artifact removal or suppression (e.g., distortion
              correction)
276   **IMAGE TRANSFORMATION OR PREPROCESSING**
277   . Transforming each dimension separately
278   . Correlation
279   . Convolution
280   . Fourier transform
281   . Walsh, Hough, or Hadamard transform
282   . Selecting a portion of an image
283   .. Using a mask
284   . Combining image portions (e.g., portions of
              oversized documents)
285   . Mapping 2-D image onto a 3-D surface
286   . Measuring image properties (e.g., length, width,
              or area)
287   .. Detecting alignment marks
288   .. Determining center of gravity or moment
289   .. Determining amount an image is rotated or
              skewed
290   ... Where the image is a character, word, or text
291   .. Determining the position of an object
292   ... Where the object is a character, word, or text
293   . Changing the image coordinates
294   .. Registering or aligning multiple images to one
              another
295   .. To position or translate an image
296   .. To rotate an image
297   ... Rotation of image is limited to 90 degrees, 180
              degrees, or 270 degrees
298   .. To change the scale or size of an image
299   ... Raising or lowering the image resolution (e.g.,
              subpixel accuracy)
300   .... Interpolation
301   ... Where the image is an alphanumeric character

302   . Multilayered image transformations
303   . . Pipeline processing
304   . . Parallel processing
305   . Image storage or retrieval
306   . . Using identification indicia on document
307   . General purpose image processor
308   . . Morphological operations (i.e., local
           neighborhood operations)
309   **EDITING, ERROR CHECKING, OR CORRECTION
           (E.G., POSTRECOGNITION PROCESSING)**
310   . Correcting alphanumeric recognition errors
311   . Including operator interaction
312   **IMAGE SENSING**
313   . Hand-held
314   . . Sensing mechanism in stylus
315   . . Sensing mechanism in platen
316   . Curve tracer
317   . Sensor control (e.g., OCR sheet controls copier
           or fax)
318   . Multiple scanning
319   . . Prescanning
320   . Magnetic
321   . Optical (e.g., OCR)
322   . . Single spot
323   . . Single line
324   . . Full retina
325   **MISCELLANEOUS**

FOREIGN ART COLLECTIONS
FOR 000   **CLASS-RELATED FOREIGN DOCUMENTS**

CLASS 345 COMPUTER GRAPHICS PROCESSING, OPERATOR INTERFACE PROCESSING, AND SELECTIVE VISUAL DISPLAY SYSTEMS

418	**COMPUTER GRAPHICS PROCESSING**
419	. Three-dimension
420	. . Solid modelling
421	. . Hidden line/surface determining
422	. . . Z buffer (depth buffer)
423	. . Tessellation
424	. . Voxel
426	. . Lighting/shading
427	. . Space transformation
428	. Adjusting level of detail
581	. Attributes (surface detail or characteristic, display attributes)
582	. . Texture
583	. . . Solid Texture
584	. . . Bump map
585	. . . Non-planar surface
586	. . . Mathematically defined
587	. . . MIP map
588	. . . Repeating pattern
589	. . Color or intensity
590	. . . Gamut clipping or adjustment
591	. . . Color processing in perceptual color space
592	. . . Transparency (mixing color values)
593	. . . Color selection
594	. . . . Using GUI
595	. . . . Expert system or AI
596	. . . Dither or halftone
597	. . . . Color
598	. . . . . Spatial
599	. . . . Spatial
600	. . . Color bit data modification or conversion
601	. . . . Using look up table
602	. . . . . Plural look up tables
603	. . . . Format change (e.g., NTSC to RGB, RGB to composite, XYZ to RGB)
604	. . . . Color space transformation (e.g., RGB to YUV)
605	. . . . Change in number of bits for a designated color (e.g., 4 bits to 8 bits, 8 bits to 4 bits)
606	. . Interpolation of attribute values across object surface
607	. . . In perspective
608	. . . Tri-linear
609	. . . Bi-linear

610   . . . Linear
611   . . Anti-aliasing or image smoothing
612   . . . Save attributes for each object affecting a
                   given pixel
613   . . . Subpixel processing
614   . . . Pixel fragment
615   . . . Convolving technique
616   . . . Error diffusion
617   . . Contrast
618   . . Image with abnormal condition
619   . Graphic manipulation (object processing or
                 display attributes)
620   . . Clipping
621   . . . Based on model of objects
622   . . . . Testing or using bounding shape (e.g.,
                      bounding box sphere)
623   . . . . Object clipped to view volume
624   . . . . Object clipped to another object
625   . . . Based on image data
626   . . . . Masking
627   . . . . Non-rectangular array
628   . . . . Rectangular region
629   . . Merge or overlay
630   . . . Combining model representations
631   . . . Reducing redundancy
632   . . . Placing generated data in real scene
633   . . . . Augmented reality (real-time)
634   . . . Image based
635   . . . . Non-overlapping
636   . . . . Character and graphics
637   . . . . Priority based
638   . . . . Insertion of bitmapped moving picture
639   . . . . Weighted
640   . . . . . Weights vary across image (e.g., transition
                        from foreground to background)
641   . . . . Fixed overlay pattern
642   . . Picking
643   . . Arithmetic processing of image data
644   . . . Matrix calculations
645   . . . Hierarchy of transformations (e.g., hierarchy of
                   global and local coordinate)
646   . . Morphing
647   . . Distortion
648   . . Affine
649   . . Rotation
650   . . . Graphical user interface tools
651   . . . . Alignment functions (e.g., snapping, gravity)
652   . . . . Constrained manipulations (e.g., movement in
                     less than all dimensions)
653   . . . . 3D manipulations
654   . . . . 2D manipulations

655	... Object based
656	... Image based (addressing)
657	.... By arbitrary angle
658	.... By 90 degrees increment
659	.... Image rotates in response to display device orientation
660	.. Scaling
661	... Graphical user interface tools
662	.... Alignment functions (e.g., snapping, gravity)
663	.... Constrained manipulations (i.e., movement in less than all dimensions)
664	.... 3D manipulations
665	.... 2D manipulations
666	... Object based
667	... Image based (addressing)
668	.... By arbitrary ratio
669	.... By integer multiples
670	.... Reduction only
671	.... Enlargement only
672	.. Translation
673	... Averaging technique
674	... Copying data to create additional rows or columns
676	... Graphical user interface tools
677	.... Alignment functions (e.g., snapping, gravity)
678	.... Constrained manipulations (i.e., movement in less than all dimensions)
679	.... 3D manipulations
680	.... 2D manipulations
681	... Object based
682	... Image based (addressing)
683	.... Sprite
684	.... Scrolling
685	..... Alphanumeric
686	..... Memory addressing
687	...... Smooth or continuous
688	..... Attribute changes during scrolling
689	.. Textual entry or display of manipulation information (e.g., enter or display degree of rotation)
440	. Graph generating
440.1	.. Real-time waveform display
440.2	.. Bar graph
441	. Shape generating
442	.. Curve
443	.. Straight line
467	. Character generating
468	.. Character geometry processing
469	... Character generation using control points or hints
469.1	.. Character border
470	.. Generating character fill data from outline data

471   .. Alteration of stored font
472   ... Scaling
472.1   .... Reduction only
472.2   .... Enlargement only
472.3   .. Calligraphic
473   . Animation
474   .. Motion planning or control
475   .. Temporal interpolation or processing
700   **OPERATOR INTERFACE (E.G., GRAPHICAL USER INTERFACE)**
701   . Force feedback interaction
702   . Tactile based interaction
703   . Cultural based (including language, time, monetary units displayed)
704   . Playback of recorded user events (e.g., script or macro playback)
705   . Help presentation
706   .. Virtual character or avatar (e.g., animated person)
707   .. Adaptive to user skill level
708   .. Context sensitive
709   ... Coaching (e.g., animated examples, or handholding or show me execution)
710   ... Input alert
711   ... Tool tip (e.g., cursor position based)
712   ... Topic roadmap or index
713   .... Hierarchical
714   .. Combining diverse help information (e.g., different sources)
715   .. Balloon or bubble appearance
716   . On screen video or audio system interface
717   .. Multiple diverse systems
718   ... Mode switching interface (e.g., switching between TV and computer)
719   .. Video interface
720   ... Video traversal control
721   ... Indexed control
722   ... Video parameter control
723   .. For video segment editing or sequencing
724   ... Cut and paste operation
725   ... Trimming
726   ... Effects or transitions interface
727   . Audio user interface
728   .. Audio input for on-screen manipulation (e.g., voice controlled GUI)
729   .. For a visually challenged user
730   . Presentation to audience interface (e.g., slide show)
731   .. Authoring tool
732   .. Slide manipulating or editing
733   . For plural users or sites (e.g., network)

734	.. Interactive network representation of devices (e.g., topology of workstations)
735	... Configuration
736	... Network managing or monitoring status
737	... User navigation between devices
738	.. Network resource browsing or navigating
739	... Selecting from a resource list (e.g., address book)
740	.. Remote operation of computing device
741	.. Access control or permission
742	... Interactive portal (e.g., secure point of access)
743	... Access rights to interactive controls
744	.. Interface customization or adaption (e.g., client server)
745	... Based on stored usage or user profile (e.g., frequency of use, cookies)
746	... Interface conversion
747	... End user based (e.g., preference setting)
748	. User interactive multicomputer data transfer (e.g., file transfer)
749	.. Downloading remote executables (e.g., Java, CGI)
750	. Multiple users on a single workstation
751	. Computer supported collaborative work between plural users
752	.. Interactive email
753	.. Computer conferencing
754	... Multicursor (e.g., multiple on-screen pointers)
755	... Floor Control
756	... Real Time Video
757	... Virtual 3D environment
758	... Chat room
759	.. Group window
760	. Mark up language interface (e.g., HTML)
761	. Plural adjacent interactive display devices
762	. User interface development (e.g., GUI builder)
763	.. Graphical or iconic based (e.g., visual program)
764	. On-screen workspace or object
765	.. Customizing multiple diverse workspace objects
766	.. Z order of multiple diverse workspace objects
767	.. Focus control of multiple diverse workspace objects
768	.. Translucency or transparency interface element (e.g., invisible control)
769	.. Data transfer operation between objects (e.g., drag and drop)
770	... Cut and paste
771	.. Instrumentation and component modeling (e.g., interactive control panel, virtual device)
772	... Progress or activity indicator
773	... Virtual input device (e.g., virtual keyboard)

774   . . Ticker metaphor

775   . . Office layout metaphor (e.g., filing cabinet, desk)

776   . . Indexed book or notebook metaphor

777   . . Tab metaphor (e.g., property sheet)

778   . . Multiple virtual screen or desktop switching

779   . . Task bar or desktop control panel

780   . . Entry field (e.g., text entry field)

781   . . Window or viewpoint

782   . . . 3D Perspective view of window layout

783   . . . On-screen window list or index

784   . . . Window scrolling

785   . . . . Autoscroll

786   . . . . Scroll tool (e.g., scroll bar)

787   . . . . . With content attributes on scroll tool

788   . . . Layout modification (e.g., move or resize)

789   . . . . Based on usage or user profile (e.g., frequency of use)

790   . . . . Overlap control

791   . . . . . Always on top

792   . . . . . Tiling or split pane

793   . . . . . Cascading

794   . . . . . Priority or overlap change (e.g., z-order)

795   . . . . . . Minimizing or send to bottom

796   . . . . . . Bring to top

797   . . . . . Viewing lower priority windows (e.g., overlapped windows)

798   . . . . Combining moving and resizing operations (e.g., moving causes resizing)

799   . . . . Moving (e.g., translating)

800   . . . . Resizing (e.g., scaling)

801   . . . . . Contained object scale change

802   . . . Focus control

803   . . . Window differentiation

804   . . . Interwindow link or communication

805   . . . . On-screen link or communication (e.g., cue)

806   . . . Window memory structure

807   . . . . Stored priority attribute

808   . . Pop-up control

809   . . Dialog box

810   . . Menu or selectable iconic array (e.g., palette)

811   . . . Based on usage or user profile (e.g., frequency of use)

812   . . . . Preselection (e.g., best guess before mouse click)

813   . . . . Default selection item

814   . . . Limited time selection opportunity

815   . . . Sizing modification (e.g., scaling)

816   . . . Partial input lookup (e.g., partial string lookup)

817   . . . Context location indication (e.g., previous or next menu item indication)

818   . . . . Simultaneous next and previous indication
                (e.g., menu road map)
819   . . . . Next menu indication
820   . . . . Previous menu indication
821   . . . Emphasis
822   . . . . Preselection emphasis
823   . . . . Selection or confirmation emphasis
824   . . . . Unavailable emphasis
825   . . . Dynamically generated menu items
826   . . . Add on item (e.g., software developed,
                customized)
827   . . . Mnemonic (e.g., accelerator key)
828   . . . Partial menu display (e.g., one menu item at a
                time)
829   . . . . Advancing to next menu item in the same
                menu
830   . . . . . Scrolling (e.g., spin dial)
831   . . . . With specific input device
832   . . . Analog selection style
833   . . . Slider control
834   . . . Radial based (e.g., radial or pie menu)
835   . . . Selectable iconic array
836   . . . . 3D icons
837   . . . . Compound or aggregate icon
838   . . . . Thumbnail or scaled image
839   . . . . Imitating real life object
840   . . . Using button array
841   . . . Sub-menu structure
842   . . . . Tear off
843   . . . . Pull down
844   . . . Timed
845   . . . Multiple selections in a single menu
846   . . Non-array icons
847   . . . Shortcut
848   . . Interface represented by 3D space
849   . . . Individual object
850   . . . Navigation within 3D space
851   . . . . On-screen navigation control
852   . . . Picking 3D objects
853   . . Hierarchy or network structure
854   . . . Navigation within structure
855   . . . . On-screen roadmap or index
856   . . Cursor
857   . . . Pointer direction adjustment
858   . . . Automatic position adjustment
859   . . . Status indicator
860   . . . . Selection emphasis
861   . . . . Dynamically changed appearance (e.g.,
                animated or live action)
862   . . . Proximity detection

863	. Gesture-based
864	. For a small display screen (e.g., personal digital assistant, palm-top)
865	. Miscellaneous interface for the handicapped or disabled user
866	. Miscellaneous customization or adaptation
867	**SCREEN SAVER DISPLAY**
156	**DISPLAY PERIPHERAL INTERFACE INPUT DEVICE**
157	. Cursor mark position control device
158	.. Including orientation sensors (e.g., infrared, ultrasonic, remotely controlled)
159	.. Having variable cursor speed
160	.. Cursor key
161	.. Joystick
162	.. Positional storage means
163	.. Mouse
164	... Rotatable ball detector
165	.... Photosensor encoder
166	... Optical detector
167	.. Trackball
168	. Including keyboard
169	.. Portable (i.e., handheld, calculator, remote controller)
170	.. Light source associated with each key
171	.. Having foreign language capability (e.g., Japanese, Chinese)
172	.. Having programmable function key
173	. Touch panel
174	.. Including impedance detection
175	.. Including optical detection
176	.. Transparent substrate having light entrapment capability (i.e., waveguides)
177	.. Including surface acoustic detection
178	.. With alignment or calibration capability (i.e., parallax problem)
179	. Stylus
180	. Light pen for CRT display
181	.. CRT having tracking capability
182	. Light pen for fluid matrix display panel
183	. Light pen for controlling plural light-emitting display elements (e.g., LED, lamps)
184	. Mechanical control (e.g., rotatable knob, slider)
501	**COMPUTER GRAPHIC PROCESSING SYSTEM**
502	. Plural graphics processors
503	.. Coprocessor (e.g., graphic accelerator)
504	.. Master-slave processors
505	.. Parallel processors (e.g., identical processors)
506	.. Pipeline processors
519	. Integrated circuit (e.g., single chip semiconductor device)

520	. Interface (e.g., controller)
522	. Graphic command processing
530	**COMPUTER GRAPHICS DISPLAY MEMORY SYSTEM**
531	. Graphic display memory controller
532	.. Plural memory controllers
533	.. Using different access modes
534	.. Memory access timing signals
535	.. Memory arbitration
536	. Plural storage devices
537	.. Data transfer between memories
538	... Data transfer between system memory display memory
539	.. Double buffered
540	.. Interleaved
541	. Shared memory
542	.. Unified memory architecture (e.g., UMA)
543	. Memory allocation
544	. Memory partitioning
545	. Frame buffer
546	.. Multi-format frame buffer
547	.. Memory for storing video data
548	.. Off-screen memory
549	.. Color memory
550	... Multiple planes
551	.. Character memory
552	. Texture memory
553	. Display list memory
554	. Multi-port memory
555	. For storing compressed data
556	. For storing condition code, flag or status
557	. Cache
558	. First in first out (i.e., FIFO)
559	. Register
560	. Row buffer (e.g., line memory)
561	. Logical operations
562	.. Bit block transfer
563	.. Mask data operation
564	. Addressing
565	.. Using memory for storing address information
566	.. Address manipulation
567	... Using decoding
568	... Address translation (e.g., between virtual and physical addresses)
569	.. For 2D coordinate to linear address conversion
570	.. Page mode
571	.. Memory addresses arranged in matrix row and column addresses)
572	.. Address generator
573	... Plural address generators

574 ... Read/Write address generator

204 **DISPLAY DRIVING CONTROL CIRCUITRY**

205 . Physically integral with display elements

206 .. Having common base or substrate

207 . Light detection means (e.g., with photodetector)

690 . Intensity or color driving control (e.g., gray scale)

691 .. Temporal processing (e.g., pulse width variation over time

692 ... Binary weighted

693 ... Non-binary weighted

694 .. Spatial processing (e.g., patterns or subpixel configuration)

695 ... Subpixels have different shapes

696 ... Changing of subpixel location over time

697 .. Including optical means

698 . Adjusting display pixel size or pixels per given area (i.e., resolution)

699 .. Controller automatically senses monitor resolution

208 . Waveform generator coupled to display elements

209 .. Field period polarity reversal

210 .. Having three or more voltage levels

211 . Display power source

212 .. Regulating means

213 .. Synchronizing means

214 . Controlling the condition of display elements

215 .. Including priming means

1.1 **PLURAL DISPLAY SYSTEMS**

1.2 . Data transmitted or received at surface of display

1.3 . Tiling or modular adjacent displays

2.1 . Remotely located

2.2 .. Presentation of similar images

2.3 .. Wireless connection

3.1 . Diverse systems (e.g., CRT or LCD interface)

3.2 .. Frame, field or scan rate conversion

3.3 .. Number of pixels per row or column conversion (i.e., resolution conversion)

3.4 ... Controller automatically senses monitor . resolution

4 **SINGLE DISPLAY SYSTEM HAVING STACKED SUPERIMPOSED DISPLAY DEVICES (E.G., TANDEM)**

5 . Diverse display devices

6 . Three-dimensional arrays

7 **IMAGE SUPERPOSITION BY OPTICAL MEANS (E.G., HEADS-UP DISPLAY)**

8 . Operator body-mounted heads-up display (e.g., helmet mounted display)

9 . Plural image superposition

10 **DATA RESPONSIVE CRT DISPLAY CONTROL**

11 . CRT provides display control

12	. Data responsive deflection and intensity control
13	. Data responsive deflection control
14	. . X and Y axis deflection control
15	. . Curvilinear deflection control (e.g., lissajous)
16	. . Stroke or vector
17	. . . Strokes for forming characters
18	. . . Up/down counter
19	. . Impedance Array
20	. Data responsive intensity control
21	. . Magnetic element array
22	. Color display
23	. Graphic and alphanumeric display
24	. Graphic display
25	. Alphanumeric display
26	. . Character generator
27	. Combined with storage means
28	. . Addressing
29	. Delay line
30	**PLURAL PHYSICAL DISPLAY ELEMENT CONTROL SYSTEM (E.G., NON-CRT)**
31	. Physically movable array
32	. Optical means interposed in viewing path (e.g., filters, lens, etc.)
33	. Segmented display elements
34	. . Seven segment display
35	. . Bar graph
36	. . . Electroluminescent display elements
37	. . . Gas discharge display segments (e.g., plasma)
38	. . . Liquid crystal display segments
39	. . . Light-emitting diode segments (LEDS)
40	. . . Plural (e.g., stacked, adjacent)
41	. . Fluid light-emitting display elements (e.g., gas, plasma)
42	. . . Controlling circuitry
43	. . Mask or electrode shape
44	. . Solid light-emitting display elements
45	. . . Electroluminescent
46	. . . Light-emitting diodes
47	. . Fluorescent elements
48	. . Light-controlling display elements
49	. . . Electrochromic elements
50	. . . Liquid crystal elements
51	. . . . Display element selection circuitry
52	. . . . Power supply generating circuitry
53	. . . . Specific waveform (e.g., square waveforms, sinusoidal)
54	. . . . . Field period polarity reversal
55	. Display elements arranged in matrix (e.g., rows and columns)
56	. . Image shifting means (i.e., traveling message)

57	... Having endless belt or tape reader
58	.. Crosstalk elimination
59	.. Matrix for conveying alphanumeric data
60	.. Fluid light emitter (e.g., gas, liquid, or plasma)
61	... Shifting means
62	.... Specified plasma coupling path
63	... Intensity control
64	... Liquid light emitter
65	... Phosphor excited by fluid response
66	... Particular discharge path
67	... More than two electrodes per element
68	... Means for combining selective and sustain signals
69	.... Resistor-diode arrangement
70	..... Including transformer
71	... Electrode insulated from fluid medium
72	... Color
73	.. Incandescent
74.1	.. Cathodolulminescent type
75.1	... Vacuum fluorescent
75.2	... Field emissive (e.g., FED, Spindt, microtip, etc.)
76	.. Electroluminescent
77	... Brightness or intensity control
78	... Having compensating pulse
79	... Field period polarity reversal
80	... Driving means integral to substrate
81	... Optical addressing (e.g., photodetection)
82	.. Solid body light emitter (e.g., LED)
83	... Color
84	.. Light-controlling display elements
85	... Electroscopic (e.g., movable electrodes or electrostatic elements)
86	... Magneto-optic
87	... Liquid crystal display elements (LCD)
88	.... Color
89	.... Gray scale capability (e.g., halftone)
90	.... Control means at each display element
91	..... Diode or varistor
92	..... Thin film tansistor (TFT)
93	..... Redundancy (e.g., plural control elements or electrodes)
94	.... Waveform generation
95	..... Three or more voltages
96	..... Field period polarity reversal
97	..... Ferroelectric liquid crystal elements
98	.... Specific display element control means (e.g., latches, memories, logic)
99	..... Particular timing circuit
100	..... Particular row or column control (e.g., shift register)

101   .... Data signal compensation in response to
            temperature
102   .... Backlight control
103   .... Grouped electrodes (e.g., matrix partitioned
            into sections)
104   .... Input/output liquid crystal display panel
105   ... Electrochromic elements
106   ... Thermochromic elements
107   ... Particle suspensions (e.g., electrophoretic)
108   .. Plural mechanically movable display elements
109   ... Having shutters
110   ... With motor or rotor driver means
111   ... With a permanent magnet placed on movable
            display elements

CROSS-REFERENCE ART COLLECTIONS

901   **ELECTRONIC BOOK WITH DISPLAY**
902   **MENU DISPLAY**
903   **MODULAR DISPLAY**
904   **DISPLAY WITH FAIL/SAFE TESTING FEATURE**
905   **DISPLAY DEVICE WITH HOUSING STRUCTURE**
947   **FONT CHARACTER EDGE PROCESSING**
948   **ALTERATION OF STORED FONTS TO MAINTAIN
            FEATURE CONSISTENCY THROUGHOUT SCALED FONT**
949   **ANIMATION PROCESSING METHOD**
950   . Sprite processing
951   .. Key frame processing
952   . Simulation
953   . Geometric processing
954   .. Quaternions
955   . Morphing
956   . Language driven animation
957   .. Actor
958   . Collision avoidance
959   . Object path adherence
960   . Iterative display of preconfigured images
961   **OPERATOR INTERFACE WITH VISUAL
            STRUCTURE OR FUNCTION DICTATED BY INTENDED
            USE**
962   . Operator interface for marketing or sales
963   . Calendar or scheduling
964   . CAD or CAM (e.g., interactive design tools)
965   . For process control and configuration
966   .. Computer process (e.g., operation of computer)
967   ... Visual or iconic programming
968   ... Interface for database querying and retrieval
969   .. Network layout and operation interface
970   .. Instrumentation and component modelling (e.g.,
            interactive control panel)
970.1 . Amusement or marital aid interface
971   **COOPERATIVE DECISION SUPPORT SYSTEMS
            FOR GROUPS OF USERS**

972	**INSERTED REAL-TIME VIDEO IN OPERATOR INTERFACE**
973	**SCROLL TOOL (E.G., WINDOW SCROLL BARS)**
974	**SLIDER CONTROLS AS ON-SCREEN OBJECTS IN OPERATOR INTERFACE**
975	**POP-UP DIALOG BOX FOR ENTRY**
976	**3-D ICONS**
977	**DYNAMIC ICON (E.G., ANIMATED OR LIVE ACTION)**
978	**AUDIO INTERACTION AS PART OF AN OPERATOR INTERFACE**

FOREIGN ART COLLECTIONS
FOR 000   **CLASS-RELATED FOREIGN DOCUMENTS**

Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collection listed below. These collections contain ONLY foreign patents or nonpatent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

PLURAL PHYSICAL DISPLAY ELEMENT CONTROL SYSTEM (E.G., NON-CRT) (345/30)
. Display elements arranged in matrix (e.g., rows and columns) (345/55)

FOR 100	.. Cathodolulminescent type (345/74)
FOR 101	... Vacuum fluorescent (345/75)
FOR 102	.. Memory (345/521)
FOR 103	. Data manipulation (e.g., masking, interpolation) (345/523)
FOR 104	.. Logical operation (345/524)
FOR 105	.. Bit block transfer (345/525)
FOR 106	. Data transfer between graphic system components (345/526)
FOR 107	**DISPLAY STORAGE DEVICE (345/507)**
FOR 108	. Color memory (345/186)
FOR 109	.. Multiple planes (345/510)
FOR 110	... Addressing with priority (345/188)
FOR 111	. Bit map or graphic memory (345/509)
FOR 112	.. Addressing (345/515)
FOR 113	.. Mask data operation (345/191)
FOR 114	. Character memory (345/192)
FOR 115	.. Addressing (345/193)
FOR 116	.. Character generator (345/194)
FOR 117	... Multiple fonts (345/195)
FOR 118	. Row buffer (e.g., line memory) (345/196)
FOR 119	. Register (345/513)
FOR 120	.. Shift register (345/197)
FOR 121	... With routing logic (345/198)
FOR 122	. Color look-up-table (e.g., palette) (345/199)
FOR 123	. Addressing circuuuitry (345/516)
FOR 124	.. Memory addresses arranged in matrix (e.g., row and column addresses) (345/517)
FOR 125	. Plural storage devices (345/508)
FOR 126	.. Data transfer between memories (345/511)

FOR 127 . Shared memory (345/512)

FOR 128 . Condition code, flag, or status (345/514)

FOR 129 . Multiple port access (345/518)

FOR 130 . Data compression or compaction (345/202)

FOR 131 . Significant data assignment in storage device (345/203)

FOR 132 **PLURAL DISPLAY SYSTEMS (345/1)**

FOR 133 . Remotely located (345/2)

FOR 134 . Diverse systems (e.g., CRT/LCD interface) (345/3)

FOR 135 **DISPLAY ATTRIBUTE CONTROLLER (345/112)**

FOR 136 . Particular overlay (e.g., superimposing feature) (345/113)

FOR 137 .. Foreground and background (345/114)

FOR 138 . Simultaneous diverse images (345/115)

FOR 139 .. Character and graphical display (345/116)

FOR 140 . Specified image of abnormal condition (345/117)

FOR 141 . Having image confined to designated region (e.g., image clipping) (345/118)

FOR 142 . Image movement or position control (e.g., panning) (345/121)

FOR 143 .. Scrolling (345/123)

FOR 144 ... Alphanumeric (345/124)

FOR 145 ... Graphical (345/125)

FOR 146 .. Rotation (345/126)

FOR 147 . Image size control (345/127)

FOR 148 .. Alphanumeric (345/128)

FOR 149 ... Reduction (345/129)

FOR 150 ... Enlargement (345/130)

FOR 151 .. Graphical (345/131)

FOR 152 . Defined resolution (e.g., EGA, VGA) (345/132)

FOR 153 . Graphic display (345/133)

FOR 154 .. Waveform display (e.g., oscilloscope type) (345/134)

FOR 155 .. Vector display (345/135)

FOR 156 .. With image smoothing control (e.g., anti-aliasing) (345/136)

FOR 157 ... Convolving technique (345/137)

FOR 158 .. Averaging technique (345/138)

FOR 159 .. Perspective (345/139)

FOR 160 .. Bar graph (345/140)

FOR 161 . Character display (345/141)

FOR 162 .. Calligraphic (345/142)

COMPUTER GRAPHICS PROCESSING (345/418)

. Character generating (345/467)

FOR 163 .. Character border (345/144)

FOR 164 **CURSOR MANIPULATION (345/145)**

FOR 165 . Menu selection (345/146)

DISPLAY ATTRIBUTE CONTROLLER (345/112)

FOR 166 . Intensity control (e.g., gray scale) (345/147)

FOR 167   .. Temporal processing (e.g., pulse width variation over time) (345/148)

FOR 168   .. Spatial processing (e.g., patterns or subpixel configurations) (345/149)

FOR 169   . Selectable color attributes (345/150)

FOR 170   .. Including optical means (345/151)

FOR 171   .. Designated subpixel arrangement (345/152)

FOR 172   .. Color bit data modification or conversion (345/153)

FOR 173   ... Format change (e.g., NTSC to RGB, RGB to composite, or XYZ to RGB) (345/154)

FOR 174   ... Change in number of bits for a designated color (e.g., 4 bits to 8 bits, 8 bits to 4 bits) (345/155)

COMPUTER GRAPHICS PROCESSING (345/418)

FOR 175   . Synchronization of diverse media (345/302)

FOR 176   **OPERATOR INTERFACE (345/326)**

FOR 177   . Interaction in a television environment (345/327)

FOR 178   .. For video segment editing or sequencing (345/328)

FOR 179   . For plural users or sites (345/329)

FOR 180   .. Computer conferencing (345/330)

FOR 181   .. Computer supported cooperative work (345/331)

FOR 182   ... Group window (345/332)

FOR 183   . Interface customization or edition (345/333)

FOR 184   .. Graphical appearance (345/334)

FOR 185   .. Link between object and task or function (e.g., client/server) (345/335)

FOR 186   . Having on-line help (345/336)

FOR 187   .. Adaptive to user skill level (345/337)

FOR 188   .. Context sensitive (345/338)

FOR 189   . On-screen workspace or object (345/339)

FOR 190   .. Window (345/340)

FOR 191   ... Window scrolled to needed portion (345/341)

FOR 192   ... Layout modification (e.g., move or resize) (345/342)

FOR 193   ... Window differentiation (345/343)

FOR 194   .... Priority (345/344)

FOR 195   ..... Viewing lower priority window (345/345)

FOR 196   ... Interwindow link or communication (345/346)

FOR 197   .. Pop-up control (e.g., message or dialog box) (345/347)

FOR 198   .. Icon (345/348)

FOR 199   ... Metaphoric icon object (345/349)

FOR 200   .... Indexed book or notebook (345/350)

FOR 201   .... Office layout (e.g., filing cabinet, desk) (345/351)

FOR 202   .. Menu (345/352)

FOR 203   ... Sub-menu structure (345/353)

FOR 204   ... Using button array (345/354)

FOR 205   .. Interface represented by 3D space (345/355)